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UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON 25, D. C.

August 19, 1958

Dear Mr. Kjellgren:

This is in reply to your letters of July 29, 1958\* addressed to me, my fellow Commissioners and other members of the AEC staff. You suggested an AEC policy encouraging the use of beryllium as a reactor material.

The use of beryllium, because of its desirable nuclear properties as a moderator, reflector, and fuel element cladding, has been supported by several Commission-sponsored projects. However, our experience to date has not given us much encouragement as to its long-range promise for use in civilian power reactors where economics is an essential part of the development objective. In addition to its high price, problems have been encountered associated with its fabrication, mechanical properties, and corrosion resistance. As progress is made in the production of the metal, oxide, and carbide, beryllium should play a more important role in reactor design.

Changes in product quality and improvement in production and fabricating techniques require a constant re-evaluation of the economic and technical merits of various reactor materials. In this respect, we are maintaining a continuing interest in beryllium, and a number of studies have been made to date comparing its relative merits with other reactor materials. The economic picture, however, is complicated. The effect of demand and volume upon the price of beryllium ore and the fabricated product is uncertain. As you know, while the beryllium industry increased in size twenty times during a fifteen-year period, the price of beryllium ore also increased in the same proportion. The beryllium industry is to be commended that the price of the beryllium products increased by a factor of only two or less during the same period. Nevertheless, this gives us some apprehension as to the future price picture. We would appreciate a thorough analysis of what price changes the reactor user can expect for fabricated beryllium products based upon an increased demand and advancements in beryllium technology.

In your letter you suggest that the waiver of use charges for D<sub>2</sub>O has a deleterious effect on the potential use of beryllium. It must be recognized that, unlike beryllium, the production of heavy water is essential to our operations. It is because we have a large installed production capability of heavy water in excess of present military needs and because we wish to promote reactor technology that we have made heavy water available for non-military uses.

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One of the objectives under the Power Demonstration Reactor Program is to develop reactors fueled with natural uranium. This direction is encouraged by allowing use of heavy water without charge for a limited period, even though for technical and economic reasons the early reactors are not designed to operate on natural uranium. Support of beryllium for this same purpose would be considered, provided its actual merit can be demonstrated.

We appreciate receiving your views on the beryllium situation. You can be assured that the Commission is very serious in its intent to provide equitable treatment to industry and to avoid pursuit of development programs based on an unrealistic promise.

Sincerely yours,

/s/ John A. McCone

Chairman

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